Approximate Ephemeris of the part of the Leonid swarm through which the Earth passed in 1866. By G. Johnstone Stoney, D.Sc., F.R.S.

In view of the great value which will attach to observations of the *Leonid* stream in the open sky if they can be secured, and taking into consideration that the conditions will be more favourable in the coming season than they have been hitherto, Dr. Isaac Roberts, undeterred by the negative results which have been encountered in former seasons, has expressed his intention of making another attempt to photograph this excessively faint object by careful and prolonged exposure. To enable him and other astronomers to make this attempt, the following Ephemeris has been prepared of that portion of the meteoric stream through which the Earth passed in 1866.

The actual perturbations which have since 1866 affected that portion of the stream have been, during the last few months, computed, assuming Adams's orbit, under the direction of Dr. Downing, F.R.S., superintendent of the *Nautical Almanac* ; and the application to Adams's orbit of the actual perturbations instead of only the average shift of the node, which was all that was known before, has made it possible to render this Ephemeris much more reliable than those which preceded it. This improvement is of importance, since the perturbations during the current revolution—that is, since 1866 November 13—have been abnormally large.

If the stream can be photographed, it will probably impress itself as a very faint and somewhat broad band crossing the field of view, presenting somewhat the appearance of the fainter portion of a comet's tail ; and it is perhaps not quite impossible that the stream, now that it is approaching both the Sun and the Earth, and now that the place to look for it is more exactly known, might be seen with an opera glass by observers where the atmosphere is unusually clear. If seen at all, it would appear to them as an excessively faint and narrow thread of light.

The computations have been made by Mr. Wright, of the *Nautical Almanac* Office, and the cost of preparing the Ephemeris has, as on former occasions, been met by a grant from the Royal Society.

Approximate Ephemeris of the Leonids.

Greenwich Midnight.	Right Ascension.	Decl.	Log. of Dist. from Earth.	Greenwich Midnight.	Right Ascension.	Decl.	Log. of Dist. from Earth.
1899.	h m s	° ′		1899.	h m s	° ′	
Jan. 1	13 43 59	N 0 59	0·6807	Jan. 6	13 44 22	N 1 14	0·6687
2	13 44 5	1 2	0·6784	7	13 44 25	1 18	0·6663
3	13 44 10	1 5	0·6760	8	13 44 27	1 21	0·6638
4	13 44 14	1 8	0·6736	9	13 44 28	1 25	0·6613
5	13 44 18	1 11	0·6712	10	13 44 29	1 28	0·6587

Greenwich Midnight.	Right Ascension.	Decl.	Log. of Dist. from Earth.	Greenwich Midnight.	Right Ascension.	Decl.	Log. of Dist. from Earth.
1899.	h m s	° ′		1899.	h m s	° ′	
Jan. 11	13 44 28	N 1 32	0·6562	Feb. 18	13 30 34	N 5 52	0·5523
12	13 44 26	1 36	0·6536	19	13 29 46	6 2	0·5495
13	13 44 24	1 41	0·6510	20	13 28 58	6 12	0·5468
14	13 44 21	1 45	0·6485	21	13 28 8	6 22	0·5441
15	13 44 16	1 49	0·6459	22	13 27 16	6 33	0·5415
16	13 44 10	1 54	0·6432	23	13 26 22	6 44	0·5388
17	13 44 4	1 59	0·6406	24	13 25 27	6 54	0·5362
18	13 43 56	2 3	0·6380	25	13 24 30	7 5	0·5335
19	13 43 48	2 8	0·6353	26	13 23 32	7 16	0·5309
20	13 43 39	2 14	0·6326	27	13 22 32	7 27	0·5283
21	13 43 29	2 19	0·6299	28	13 21 31	7 39	0·5258
22	13 43 17	2 25	0·6272	Mar. 1	13 20 28	7 50	0·5233
23	13 43 5	2 30	0·6245	2	13 19 23	8 2	0·5208
24	13 42 52	2 36	0·6218	3	13 18 17	8 13	0·5184
25	13 42 37	2 42	0·6191	4	13 17 10	8 25	0·5159
26	13 42 22	2 48	0·6163	5	13 16 1	8 37	0·5135
27	13 42 5	2 54	0·6135	6	13 14 50	8 49	0·5112
28	13 41 47	3 0	0·6108	7	13 13 38	9 1	0·5088
29	13 41 28	3 7	0·6080	8	13 12 25	9 13	0·5065
30	13 41 7	3 14	0·6052	9	13 11 10	9 26	0·5043
31	13 40 46	3 21	0·6025	10	13 9 54	9 38	0·5021
Feb. 1	13 40 23	3 28	0·5997	11	13 8 36	9 50	0·4999
2	13 39 59	3 35	0·5969	12	13 7 17	10 3	0·4977
3	13 39 34	3 42	0·5941	13	13 5 57	10 16	0·4956
4	13 39 7	3 50	0·5913	14	13 4 35	10 28	0·4936
5	13 38 39	3 57	0·5885	15	13 3 11	10 41	0·4916
6	13 38 10	4 5	0·5857	16	13 1 46	10 54	0·4897
7	13 37 40	4 13	0·5828	17	13 0 20	11 7	0·4878
8	13 37 8	4 21	0·5800	18	12 58 53	11 20	0·4860
9	13 36 35	4 30	0·5772	19	12 57 24	11 33	0·4842
10	13 36 1	4 38	0·5744	20	12 55 54	11 46	0·4824
11	13 35 26	4 47	0·5717	21	12 54 23	11 58	0·4807
12	13 34 49	4 56	0·5689	22	12 52 51	12 11	0·4791
13	13 34 10	5 5	0·5661	23	12 51 18	12 24	0·4776
14	13 33 29	5 14	0·5633	24	12 49 44	12 37	0·4761
15	13 32 47	5 23	0·5605	25	12 48 9	12 50	0·4747
16	13 32 4	5 33	0·5577	26	12 46 33	13 3	0·4733
17	13 31 20	5 42	0·5550	27	12 44 55	13 15	0·4719

Greenwich Midnight.	Right Ascension.	Decl.	Log. of Dist. from Earth.	Greenwich Midnight.	Right Ascension.	Decl.	Log. of Dist. from Earth.
1899.	h m s	° ′		1899.	h m s	° ′	
Mar. 28	12 43 17	N 13 28	0·4707	Apr. 5	12 29 49	N 15 7	0·4630
29	12 41 38	13 41	0·4695	6	12 28 6	15 18	0·4623
30	12 39 59	13 53	0·4684	7	12 26 23	15 30	0·4617
31	12 38 19	14 6	0·4673	8	12 24 40	15 41	0·4611
Apr. 1	12 36 38	14 18	0·4663	9	12 22 56	15 53	0·4606
2	12 34 56	14 30	0·4654	10	12 21 12	16 4	0·4602
3	12 33 14	14 43	0·4645	11	12 19 28	16 15	0·4599
4	12 31 32	14 55	0·4637	12	12 17 43	N 16 26	0·4596

The South Temperate Current of Jupiter, and the Red Spot.

By A. Stanley Williams.

The south temperate current is remarkable above all the other surface currents of *Jupiter* for the uniformity of its motion. This current comprises within its limits the conspicuous belt south of the south equatorial belt, now very generally known as the south temperate belt, and it is from observations of the numerous and prominent spots, and other irregularities of this belt, that we derive most of our information respecting the velocity of its motion. The current, however, is not confined to the south temperate belt. On the north it reaches to the south equatorial belt, whilst on the south its limit varies somewhat from year to year, and even in the same year in different longitudes. Sometimes it extends so far south as to include the dark belt just south of the south temperate belt; whilst occasionally, the more swiftly moving southern current encroaches upon the south temperate current to such an extent that, in certain longitudes, at least, it actually touches the south edge of the south temperate belt. This latter condition occurred, for instance, in 1892, and again in the present year. I have recently made fresh determinations of the velocity of the south temperate current in the years 1881 and 1888, and the results are given below.

1881.

Towards the end of September of this year there was a conspicuous belt visible a little south of the south edge of the red spot, which belt* was not continuous, but ended abruptly in longitude 115°, and the time at which the end of the belt appeared to be in mid-transit was noted upon nine nights.

* It appears uncertain whether this belt is identical with the present south temperate belt, or with a belt just south of the latter. Its approximate latitude, from measures of two drawings, is—$27\frac{1}{2}°$. There was a broad, bright interval between the north edge of the belt and the south edge of the red spot.